Supporting Information (SI) for Publication

Smartphone-based Dual-channel Immunochromatographic Test Strip with Polymer Quantum Dot Label for Simultaneous Detection of Cypermethrin and 3-phenoxybenzoic acid

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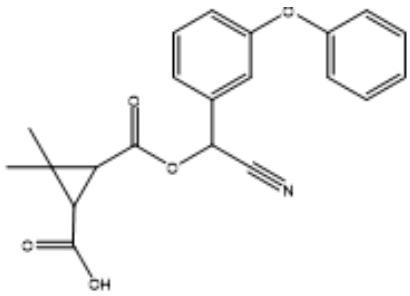

Figure S1. The structure of hapten, which was used to prepare the pyrethroid coating antigen.

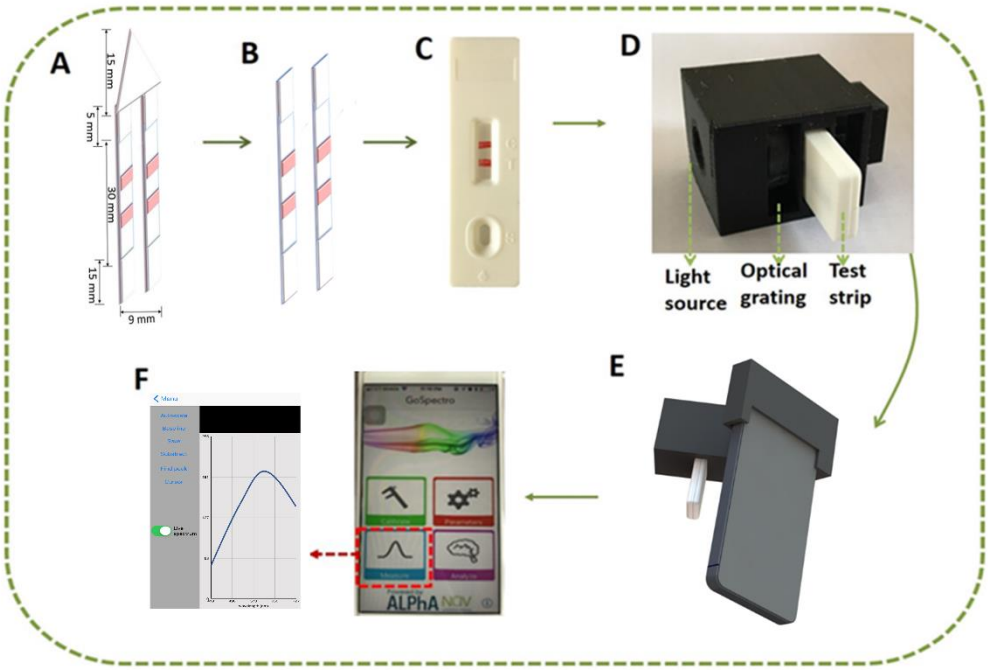

Figure S2. (A-B) Dimensions of each part of dual channel ICTS. (C) Plastic card integrated with test strips. (D) 3D-printed accessory. (E) Assembling with smartphone detection device. (F) Analysis of the fluorescence intensity on the final device.

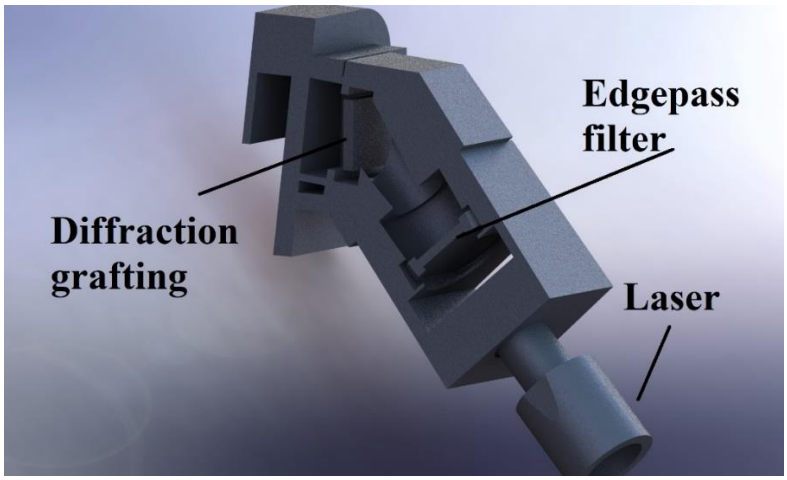

Figure S3. Schematic side view showing inner structure of the 3D-printed device.

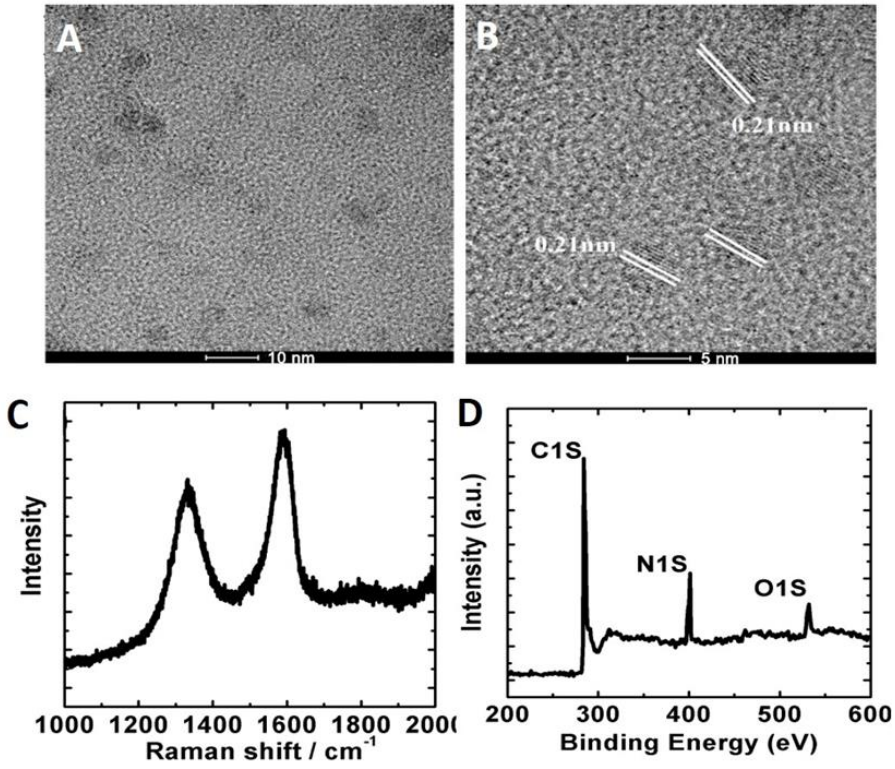

Figure S4. (A) TEM image of carbon dots; (B) HRTEM image of carbon dots; (C) Raman spectrum of carbon dots; (D) XPS spectrum of carbon dots.

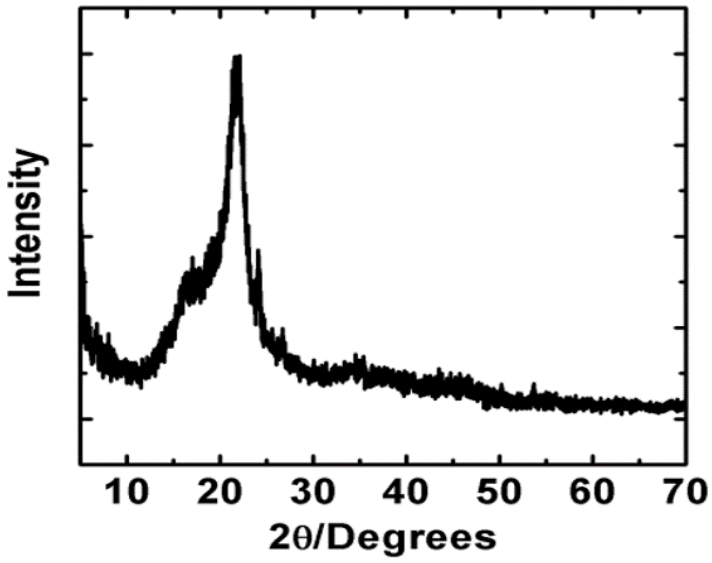

Figure S5. XRD pattern of carbon dots.

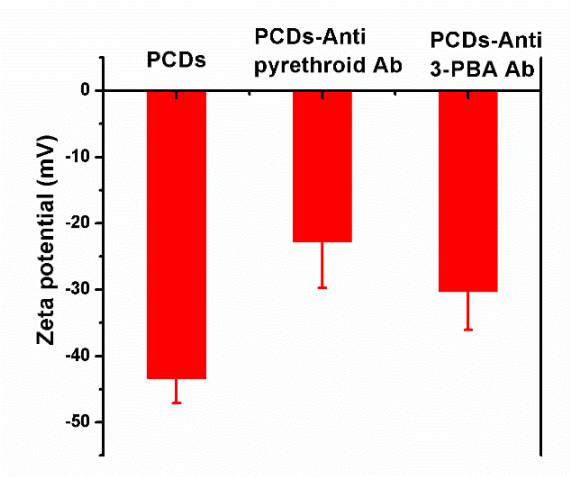

Figure S6. Zeta potential of PCDs and PCDs-anti pyrethroid Ab and PCDs-anti 3-PBA Ab.

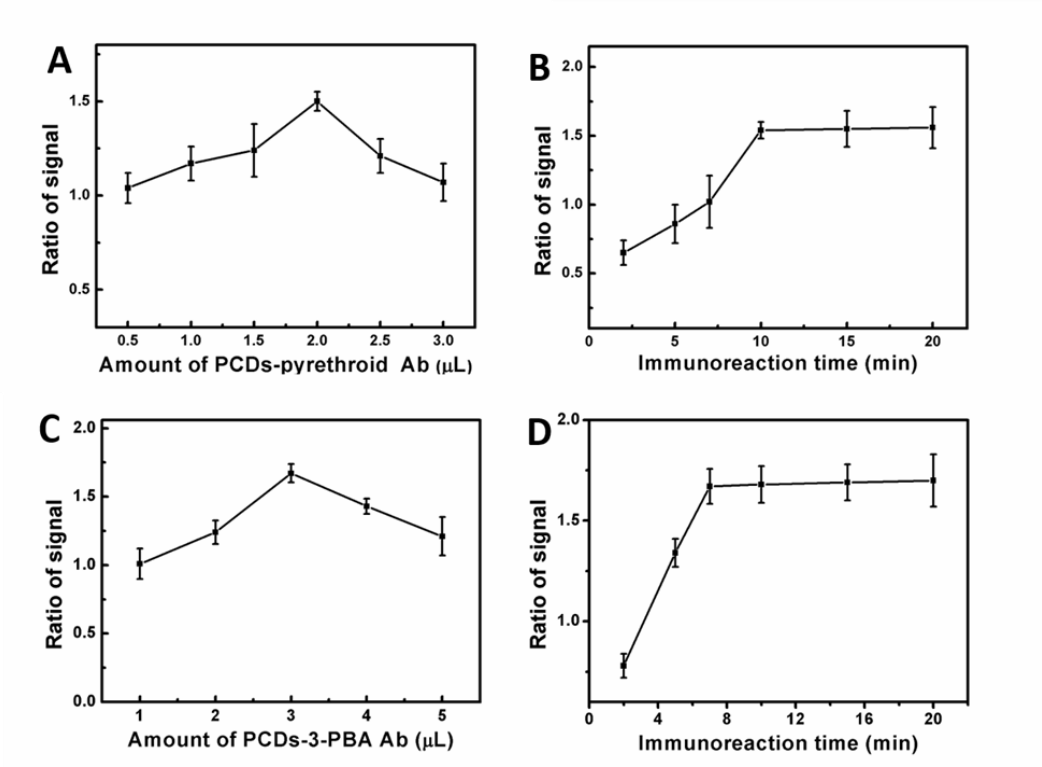

Figure S7. Optimization of experimental parameters for the dual channel ICTS including amount of PCDs-pyrethroid Ab (A) and immunoreaction time (B) for assay pyrethroids; amount of PCDs-3-PBA Ab (C) and immunoreaction time (D) for assay 3-PBA. The ratio of signal recorded in the absence and presence of cypermethrin or 3-PBA in the sample.

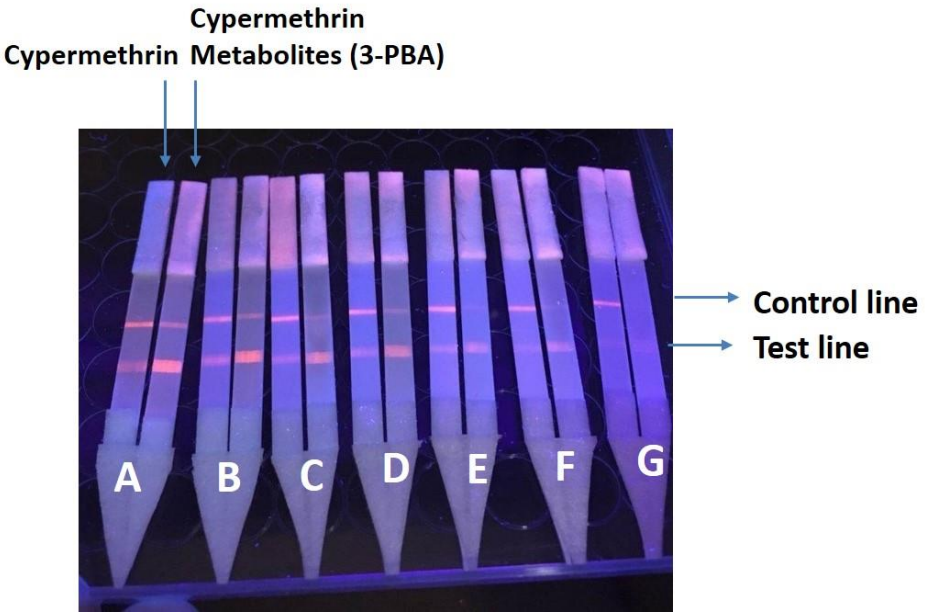

Figure S8. Photograph of different fluorescence intensities in the proposed ICTS assay for cypermethrin (left) and 3-PBA (right). The concentration of 3-PBA was (A) 0 ng/mL, (B) 0.1 ng/mL, (C)1 ng/mL, (D) 5 ng/mL, (E) 10 ng/mL, (F) 50 ng/mL and (G) 100 ng/mL. The concentration of cypermethrin was (A) 0 ng/mL, (B) 1 ng/mL, (C) 5 ng/mL, (D) 10 ng/mL, (E) 20 ng/mL, (F) 50 ng/mL and (G) 100 ng/mL.